

What is claimed:

1. A method for forming a solder bonded sputter target/backing plate assembly comprising the steps of:

a) forming a backing plate with a bonding surface having a plurality of spaced-apart ridges that are disposed on and within the periphery of the bonding surface of the backing plate;

b) forming a sputter target having a sputtering surface and bonding surface;

c) applying a solder material to the interface spaces defined by superimposing said sputter target within the periphery of and onto the plurality of ridges on the backing plate; and

d) allowing said solder material to solidify and bond the sputter target to the backing plate so that the plurality of ridges provide an effective uniform thickness solder bonded interface.

2. The method of claim 1 wherein the backing plate and sputter target are disc-shaped.

3. The method of claim 1 wherein the ridges on the bonding surface of the backing plate have a shape selected from the group comprising a circle, arcuate, square, rectangular, polygon and combination thereof.

4. The method of claim 1 wherein the height of the ridges is between about 0.005 inch and about 0.050 inch.

5. The method of claim 1 where the thickness of the width of the ridges is between about 0.005 inch and about 0.050 inch.

6. The method of claim 3 wherein the ridges are arcuate-shaped.

7. The method of claim 6 wherein the height of the ridges is between about 0.010 inch and about 0.030 inch and the thickness of the width of the ridges is between about 0.010 inch and about 0.030 inch.

8. The method of claim 7 wherein the height of the ridges is about 0.020 inch.

9. The method of claim 8 wherein the thickness of the width of the ridges is about 0.020 inch.

10. The method of claim 6 wherein the radial distance between the adjacent arcuate ridges is between about 0.2 inch and 2.0 inch.

11. The method of claim 10 wherein the height of the ridges is between about 0.010 inch and about 0.030 inch and the thickness of the width of the ridges is between about 0.010 inch and about 0.030 inch.

12. The method of claim 1 wherein the sputter target is selected from the group comprising titanium, aluminum, copper, molybdenum, cobalt, chromium,

ruthenium, rhodium, palladium, silver, iridium, platinum, gold, tungsten, silicon, tantalum, vanadium, nickel, iron, manganese, germanium, and alloys thereof.

13. The method of claim 1 wherein the backing plate is selected from the group comprising copper, aluminum, titanium, and alloys thereof.

14. The method of claim 1 wherein the solder is liquid or paste and selected from the group comprising tin-lead, indium-tin, tin-silver, tin-copper, or tin-silver-copper.

15. The method of claim 14 wherein the sputter target is selected from the group comprising titanium, aluminum, copper, molybdenum, cobalt, chromium, ruthenium, rhodium, palladium, silver, iridium, platinum, gold, tungsten, silicon, tantalum, vanadium, nickel, iron, manganese, germanium, and alloys thereof.

16. The method of claim 15 wherein the sputter target is selected from the group comprising cobalt, nickel, and alloys thereof.

17. The method of claim 16 wherein the height of the ridges is between about 0.010 inch and about 0.030 inch and the thickness of the width of the ridges is between about 0.010 inch and about 0.030 inch.

18. A solder bonded sputter target/backing plate assembly comprising a backing plate having a plurality of spaced-apart ridges disposed on and within the periphery of the bonding surface of said backing plate; a sputter target having a sputter surface and a bond surface; said sputter target superimposed onto the plurality of ridges on the bonding surface of the backing plate; and a solder bonded layer disposed between the sputter target and backing plate and between the ridges producing an effective uniform thickness solder bonded interface for the sputter target/backing plate.

19. The solder bonded sputter target/backing plate assembly of claim 18 wherein the sputter target is selected from the group comprising titanium, aluminum, copper, molybdenum, cobalt, chromium, ruthenium, rhodium, palladium, silver, iridium, platinum, gold, tungsten, silicon, tantalum, vanadium, nickel, iron, manganese, germanium, and alloys thereof.

20. The solder bonded sputter target/backing plate assembly of claim 18 wherein the bonded solder is selected from the group comprising tin-lead, indium-tin, tin-silver, tin-copper, or tin-silver-copper.